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ABSTRACT

This study analyzed change in sport competence beliefs, perceived value of athletics, and self-esteem, employing a 3-year longitudinal sample of children. Data came from a 10-year longitudinal study of the development and socialization of children's competence-related beliefs, valuing of different achievement activities, and self-esteem. The study proposed that student valuing of athletics would decrease linearly and in proportion to decreases in athletic competence beliefs, whereas self-esteem would remain stable over the same 3-year period. It also proposed that the slope and intercept variances of athletic competence beliefs, valuing of athletics, and self-esteem would be significant. Participants were 865 elementary students who completed questionnaires each spring measuring their competence beliefs and subject task values about math and reading, instrumental music, and sports, as well as other constructs including self-esteem. Data analysis indicated that the declines in both sport competence beliefs and the value of athletics over the 3-year period were statistically significant. As students learned they were not as competent athletically as they once believed, they may have compensated for the decline with a proportional decline in the perceived value of athletics. The hypothesis that self-esteem would remain stable received only mixed support. (Contains 54 references.) (SM)

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Changing Competence Perceptions, Changing Values: Implications for Youth Sport

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Abstract

William James' (1892/1961) definition of self-esteem, the ratio of success over pretensions, has been the focus of much research and theory (e.g., Epstein, 1973, Harter, 1998; Marsh, 1994). Unfortunately research findings in support of James' ratio have been mixed, depending on the research methods applied. Two potential reasons for the mixed findings are submersion of the formulation under the rubric "importance," and reliance by researchers on cross-sectional data analysis. While importance is one dimension of pretensions, the gist of James' definition is the cognitive compensation resulting from decrease in success, for the purpose of self-esteem maintenance, a process occurring over time. In the present study, James' ratio was assessed in the domain of sport, an area in which it has not often been assessed. The stability of children's success (sport competence beliefs), pretensions (the perceived value of athletics), and self-esteem are assessed over a three-year period, with latent growth modeling. The results provide some support James' hypothesis. Implications for youth sport are discussed.

Changing Competence Perceptions, Changing Values:

Implications for Healthy Self

Over a century ago, William James (1892/1961) introduced his now frequently cited definition of self-esteem in the following passage:

> So our self-feeling in this world depends entirely on what we back ourselves to be and do. It is determined by the ratio of our actualities to our supposed potentialities; a fraction of which our pretensions are the denominator and the numerator our success: thus, self-esteem = success/pretensions. (p. 54)

Based on his definition, James proposed that to avoid the perils of low self-esteem (success/pretensions) and the resulting negative affect, individuals either increase their successes, or decrease the importance of once powerful beliefs about the self (pretensions). He wrote:

> Such a fraction may be increased as well by diminishing the denominator as by increasing the numerator. To give up pretensions is as blessed a relief as to get them gratified; and where disappointment is incessant and the struggle unending, this is what men will always do. …There is the strangest lightness about the heart when one's nothingness in a particular line is once accepted in good faith. (p. 54)

Researchers interested in the self are clearly indebted to James for their theoretical models of the self and its processes. One example is Epstein (1973), who proposed three unique functions of the self-theory (his term for self-concept): assimilation of experience, promotion of self-esteem, and maintenance of a positive pleasure-pain balance. The three functions assimilate James' definition of self-esteem, and represent adaptive psychological functioning. Essentially, Epstein proposed that a good self-theory has the widest breadth possible such that it may assimilate all experience its beholder is likely to encounter. Once proper breadth is established, and that

depends on the nature of the environmental challenges present, the self-theory better maintains self-esteem and positive affect.

Two researchers have conducted most of the research to assess James' definition of self-esteem. Both Harter and her colleagues (e.g., Harter 1985, 1986; Neeman & Harter, 1986), and Marsh and his colleagues (Marsh, 1986; Marsh, 1993, 1994; Marsh & Sonstroem, 1995) have explored the roles of perceptions of competence and subjective importance (their operational definition of pretensions), across a variety of domains including sport, in relation to self-esteem. They proposed that when individuals are competent in areas perceived important (areas of high pretensions, in James' parlance), self-esteem should be high. Conversely, believing one is incompetent in an area perceived important should lower self-esteem. Harter and her colleagues have found that individuals who attach high importance to areas in which they perceive they lack competence have lower self-esteem than individuals whose competence and importance ratings are not discrepant. Their research, conducted with a variety of populations ranging from children to adults, thus lends rather strong support for James' formulation (see Harter, 1990a, 1990b, & 1998, for reviews of her research); individuals with greater congruence between their perceptions of competence and importance have higher self-esteem.

Marsh and his colleagues explored the role of subjective importance employing multiple regression analysis with self-esteem as a dependent variable, and self-concept of ability, importance, and their interaction as predictors. Like Harter and her colleagues, Marsh and colleagues conducted their research with a variety of samples ranging from children to adults. However, unlike Harter, Marsh and colleagues (Marsh, 1986, 1993, 1994; Marsh & Sonstroem, 1995) found that importance added little to the prediction of self-esteem beyond the variance

explained by self-concept. Further, they found that self-concept unweighted by importance is the strongest predictor of self-esteem, something Harter failed to explore in her research on importance (see Marsh, 1993, for a thorough discussion of the importance issue, and Harter's method).

Perhaps one reason for the failure of these researchers to find consistent support for the relationship between perceived competence, importance, and self-esteem is that they did not fully assess James' original premises. A careful reading of his passages, quoted previously, reveals a more complex relationship than merely success over pretensions. Recall that James proposed that "such a fraction" (referring, of course, to his definition of self-esteem) is increased by either "diminishing the denominator" or "increasing the numerator." One way to examine these increases and decreases proposed by James is to measure perceptions of competence, importance, and self-esteem longitudinally. Statistically, if James was correct that the balance between success and pretensions is what helps maintain self-esteem, analysis of the data should reveal two functions (one for each success and pretensions) that are equal in form (proposed linear in the present case) with similar slopes, and a third for self-esteem that remains stable over time. Although not allowing causal conclusions, proportional change in success and pretensions, with stability in self-esteem, is suggestive of cognitive compensatory processes designed to maintain self-esteem.

In the present study, we analyzed change in sport competence beliefs, perceived value of athletics, and self-esteem, employing a three-year longitudinal sample of children and adolescents. This data come from a larger 10-year longitudinal study of the development and socialization of children's competence-related beliefs, valuing of different achievement activities, and self-esteem (see Wigfield et al., 1997, for more details about the larger project).

We focused on sport because athletic involvement is critical to physical and psychological health (see Partonen, Lepamaki, Hurme, & Lonnqvist, 1998, for an example of the role of exercise in psychological health). If the valuing of athletics drops early in life, perhaps children will not stay involved in sport, precluding the benefits of an active lifestyle.

For the purpose of this study, success was defined operationally as athletic competence beliefs assessed in terms of participants' perceived ability, perceived ability relative to the self and others, expectancy of success, and ability to learn new athletic activities.[1] Pretensions was defined operationally as perceived value of athletics, which as defined by Eccles and colleagues includes an activity's usefulness, importance, and interest to the individual (e.g., Eccles, Wigfield, Harold, & Blumenfeld, 1993). We chose to operationalize pretensions in this way because we think the broader value construct is more in line with James' original notion of pretensions, which goes beyond just the "importance" of an activity to the individual. Recall that James (1892/1961) defined pretensions as "...what we back ourselves to be and do...(and) our supposed potentialities..." (p. 54) An example of a pretension consistent with both James' definition and the present operational definition is the claim "I am a tennis player." This claim includes an implicit liking of tennis and interest in tennis. It also includes the unspoken belief that tennis is a useful activity worth the claimant's time devotion to practice and play. Moreover, tennis is important enough to the claimant that it is made a defining facet of the conception of self.

We proposed, consistent with James' (1892/1961) hypothesis, that the experience of three school years will result in a cognitive compensation to the reality of one's changing physical competence, proposed to decrease over time, with a proportional decrease in the valuing of physical competence, with self-esteem remaining stable.[2] Further, it was hypothesized that

significant variability in both initial sport competence beliefs and perceived value of athletics, and rate of change, will be found, something other research methods (e.g., repeated measures ANOVA) generally preclude (Lawrence & Hancock, 1998).

The focus on development of competence beliefs in children and adolescents is not new. However, the focus on dynamic cognitive processes in relation to self-esteem maintenance in children and adolescents tests the validity of James (1892/1961) and Epstein's (1973) hypotheses regarding the relations among success, pretensions, and self-esteem, in a younger population. Both James and Epstein's hypotheses referred to psychological processes occurring primarily in adult populations. We proposed that these same processes emerge earlier, with the experience of children and adolescents interacting in dynamic social environments.

We predicted that, children's sport competence beliefs will decline because several researchers have found that children's competence beliefs for different activities decline across the elementary school years and even through the high school years (see Dweck & Elliott, 1983; Eccles et al., 1993; Jacobs, Hyatt, Eccles, Osgood, & Wigfield, in press; Marsh, 1989; Stipek & Mac Iver, 1989; Wigfield et al., 1991). In the academic domain, Nicholls (1979) found that most first grade children ranked themselves near the top of the class in their reading ability. By age 12, children's ratings were more dispersed. In their cross-sectional survey studies of children's competence beliefs in different domains, including several academic domains and sport, both Eccles et al. (1993) and Marsh (1989) report that younger children have more positive competence beliefs than do older children, particularly in the academic achievement domains but also in sport. Recently, in longitudinal follow-ups to the Eccles et al. (1993) study, Wigfield et al. (1997) found children's competence beliefs for math, reading, instrumental music, and sport declined across the elementary school years, and Jacobs et al. (in press) found that the decreases

continued through high school. In the Jacobs and colleagues work, the decreases in sport competence beliefs became stronger during the adolescent years. Ulrich (1987) reported that across kindergarten through fourth grade children's perceptions of physical competence decreased. Lee and her colleagues (Lee, Carter, & Xiang 1995; Lee, Hall, & Carter, 1983; Lee, Nelson, & Nelson, 1988) also found that younger children have more positive physical competence beliefs and expectations than do older children. The overall picture is that children have more optimistic competence beliefs during the early school years, which decline as they go through school (see Stipek & Mac Iver, 1989).

Less research has been conducted on change in subjective task values over time. Wigfield and colleagues (1997) found that perceptions of the usefulness and importance of sport decreased over the three-year period assessed in their study. However, interest in sport remained rather stable over the same period in their sample. Jacobs et al. (in press) showed that the overall valuing of sport activities by children declined across the elementary and secondary school years.

Self-esteem tends to decline gradually across childhood, but then increase again through high school (Harter, 1998). The gradual declines found in childhood likely result from an increasing focus on social comparison with age, whereas the latter trend toward increase in self-esteem results likely from a greater ability to discount areas of weakness, consistent with James' (1892/1961) hypothesis. Zimmerman and colleagues (Zimmerman, Copeland, Shope, & Dielman, 1997) found that self-esteem tended toward stability from 6th through 10th grade, and was relatively high for the majority of their participants. However, they also found variability in developmental trajectory, including participants with gradually increasing or declining self-esteem, and participants with consistently low self-esteem. The findings indicate a need to explore idiographic as well as nomothetic growth patterns in self-conceptions. We tested for

individual difference in sport competence beliefs, valuing of athletics, and self-esteem in the present study.

In summary, we proposed that student valuing of athletics will decrease linearly and in proportion to decreases in athletic competence beliefs, whereas self-esteem will remain stable over the same three-year period. Furthermore, we proposed that the slope and intercept variances of athletic competence beliefs, valuing of athletics, and self-esteem will be significant. If our hypotheses are supported, these findings would indicate that children and adolescents' cognitive processing of sport competence beliefs, valuing of athletics, and self-esteem are similar to those proposed by James (1892/1961) and Epstein (1973) for adults. Second, these findings would indicate that these cognitive processes are idiosyncratic. Finally, the findings would indicate that to assess James' definition of self-esteem adequately, researchers should conduct longitudinal data analysis, in addition to employing cross-sectional methods.

Methods

Participants

Participants were 865 elementary school children participating in the larger study, a ten-year longitudinal study of the development and socialization of children's achievement beliefs and values. Because we were interested in the early development of children's perceptions of competence and importance, we utilized data from the first three years of the project. Children were recruited through their schools; all children in each classroom were asked to participate. Seventy five percent of the children both agreed to participate and obtained parental permission. During Year 1, 865 first, second, and fourth grade children attending 10 elementary schools in four school districts in the suburbs of a large Mid-Western city participated. These children comprise the base sample. By Year 3, these children were in grades three, four, and six.

The final longitudinal sample used in the analyses presented includes approximately 615 children (the *N* varies slightly across measures because of small variations in missing data, which occurred when children failed to complete a few items on the questionnaire). Three hundred and twenty five are girls; 290 are boys. Cohort 1 (first graders in Year 1, second graders in Year 2, third graders in Year 3) contains 195 children: Cohort 2 (second graders in Year 1, third graders in Year 2, fourth graders in Year 3) contains 210 children; Cohort 3 (fourth graders in Year 1, fifth graders in Year 2, sixth graders in Year 3) contains 210 children. Based on information about income provided by the school districts, the children are from middle class backgrounds; average family income in the districts is $50,000. Over 95% of the children are European-American. The sample's average income was identical to that of the larger population from the school districts. Also, the longitudinal sample did not differ from the first-year sample on any of the variables studied (see Wigfield et al., 1997).

Procedure and Measures

Each spring, the children completed questionnaires measuring their competence beliefs and subjective task values about math and reading, instrumental music, and sports, as well as other constructs including self-esteem. Children completed the questionnaires in their classrooms in the participating schools. Most items were answered using one to seven Likert-style response scales and the items were modified from earlier questionnaire items developed by Eccles and her colleagues to assess children and adolescents' beliefs about mathematics, English, sports, and social activities. The items have good psychometric properties (see Eccles, 1984; Eccles, Adler, & Meece, 1984; Eccles et al., 1983; Eccles & Wigfield, 1995; Eccles et al., 1993; Parsons, Adler, & Kaczala, 1982). Because the children in the current study are younger than children in previous studies using these questions, great care was taken

(particularly during the first year of questionnaire administration) to ensure that the children understood the constructs being assessed. The items received extensive pilot testing for use with younger children (see Eccles et al., 1993, for more detailed discussion). All questions were read aloud to the children in Years 1 and 2; in Year 3, the oldest two groups read the questionnaires on their own. The questionnaires were administered in three sessions lasting 20 minutes each.

Instrumentation

Sport competence belief items. The six competence belief items asked the children how good they are in sport, how good they are relative to other things they do, how good they are relative to other children in their class, how well they expect to do in the future in sport, how good they are at tumbling and gymnastics, and how good they would be at learning a new sport. The specific items are available in Eccles et al. (1993).

Perceived value of athletics. The athletic valuing instrument employed in this data analysis represents items assessed in all three years of the study. The four seven-point Likert items asked children to rate the usefulness of sports activities to them, importance of sport ability, interest in sport assignments, and liking of doing sports; the specific items are available in Eccles et al. (1993).

Self-esteem. Self-esteem was measured using Harter's (1982, 1985) self-esteem scale, a widely used measure of self-esteem. In Year 1 of the study, three items from this scale were given to children; the items asked children if they wanted to change or stay the same; if they are happy with who they are or want to be different, and if they do badly or do okay. In subsequent years, additional items from Harter's scale were included. For comparability, however, we utilize the three common items in the analyses reported in this manuscript.

Scale construction. Based on factor analyses and theoretical considerations (see Eccles et al., 1993, for more details about the factor analyses), scales were developed for the competence belief and subjective value constructs. Internal consistency reliabilities for the sport competence beliefs scale ranged from .78 to .81 across the three years of the study. For subjective valuing of sport, reliabilities ranged from .65 to .77 across the three years. For self-esteem, the internal consistency reliabilities are .50, for Year 1, .60 for Year 2, and .62 for Year 3. The means, internal consistency reliabilities, and standard deviations for all the variables are presented in Table 1.

Statistical Analysis

Analysis of the data was conducted with latent growth modeling (LGM). LGM is a special form of structural equation modeling. LGM assesses individual growth curves, averaging slopes and intercepts to evaluate the fit of general growth patterns to the data (Baer & Schmitz, 2000; Duncan & Duncan, 1995; Lawrence & Hancock, 1998). In LGM, intercepts and slopes are the factors (i.e., latent variables) proposed responsible for growth of some variable over time. In the current study, three separate LGM were assessed: one each for sport competence beliefs, perceived value of athletics, and self-esteem. The basic model assessed in all three analyses appears in Figure 1.

LGM is ideal for longitudinal data sets like that analyzed in this study. First, it does not rely on tenuous assumptions. For instance, the sphericity assumption in repeated measures analysis of variance is that differences between repeated measures (e.g., between two consecutive time points) maintain constant variance and are not correlated (Stevens, 1996). However, rarely are such differences invariant as individual development is idiosyncratic (Lawrence & Hancock, 1998). LGM allows researchers to incorporate idiosyncratic

developmental patterns, and analyze variation in both rate of change (slope) and initial values (intercepts). The key assumptions of LGM are that participant growth patterns follow the same functional form (e.g., linear or quadratic), error terms are not correlated with the exogenous variables, intervals between repeated measurements are equal, there is multivariate normality, meaning of variables at repeated measurement is equal, and observations are independent (Baer & Schmitz, 2000, pp. 244-245).

In the present study, linear growth is hypothesized. To assess the fit of a linear growth pattern to the data, the path coefficients from the slope factors to the measured variables (e.g., sport competence beliefs for years 1-3) are set to zero, one, and two (see Figure 1). As intercept values do not change, the path coefficients between the intercept factors and the measured variables are set equal to one.

To assess slope and intercepts for individual difference, LGM allows researchers to test the hypothesis that slope and intercept variances are not equal to zero. To do so, a constant (V999) is added and is set equal to one. Because V999 is the proposed cause of variation in the slope and intercept variance, but has no variance (constants do not vary), all the variance in the two factors is caused by the two error terms (disturbances D1 and D2 in Figure 1). Therefore, to test for significance in variability of slopes and intercepts, one simply looks at significance tests for the disturbances (see Lawrence and Hancock, 1998, for an excellent discussion of LGM).

The Comparative Fit Index (CFI) was used to indicate goodness of fit. The CFI is the index of choice in structural equation modeling (Byrne, 1994). Values greater than .90 are indicative of proper model fit to the data (Byrne, 2000), although higher estimates (e.g., .95) are currently preferred (Hu & Bentler, 1999). All analyses were conducted with EQS structural

equation modeling program (Bentler, 1995). Slope and intercept values were considered significant, along with variance estimates for these two parameters at $p < .05$.

The use of LGM in the present study allowed determination of slopes and intercepts for sport competence beliefs, perceived value of athletics, and self-esteem, enhancing the researchers' ability to determine how both athletic related belief s change over time, and the relation of their change to change in self-esteem. If the rates of change for the former are similar, and in the same direction, but different than self-esteem, which was proposed to remain constant, support will be found for James' formula with this data. If, however, the rates of change for sport competence beliefs and perceived value of athletics differ greatly (i.e., they change in different directions, or one remains constant while the other changes), support for James' formula will be absent. Further, if self-esteem does not remain constant, changing along with changes in both or either of the two constructs, cognitive compensations, as those proposed by James and later by Epstein (1973), will not be supported.

Results

Means, standard deviations, and reliabilities for sport competence beliefs, perceived value of athletics, and self-esteem, for all three years of the study, are presented in chronological order in Table 1. A chart of the linear growth patterns with intercept and slope values, appears in Figure 2.

Multivariate Normality

To assess the data for multivariate normality, EQS provides a normalized estimate that relates to kurtosis only (Byrne, 1994). According to Byrne, there is no absolute criteria to judge the nonnormality of a sample, however, large positive values of the normalized estimate indicate significant positive kurtosis, whereas large negative values indicate significant negative kurtosis.

(p. 82) In the present sample, the values for the normalized estimate were 6.75, 19.57, and -1.12, for sport competence beliefs, valuing of athletics, and self-esteem, respectively. Only the normalized estimate for valuing of athletics was suggestive of non-normality. Therefore, analyses of χ^2 estimates and standard errors for the valuing of athletics were made with robust statistics that correct for non-normality, available in EQS (Byrne, 1994). All other assumptions of LGM were met.

Sport Competence Beliefs

Data analysis of the LGM for sport competence beliefs resulted in a significant mean intercept value of 5.57, $p < .001$, and a slope value of -.157, $p < .001$. The intercept variance, equal to the disturbance (D1, the error term for the intercept factor) was significant at .667, $p < .05$. Similarly, the slope variance (D2, the error variance for the slope term) was significant at .075, $p < .05$. The correlation between slope and intercept was -.106, $p > .05$. Goodness of fit indices point to acceptable model fit to the data, with χ^2 (1, $N = 865$) = .20, $p > .05$, and CFI = 1.0. That is, a negative linear growth model, over the three years analyzed, fits the data well. These findings indicate idiosyncratic negative growth (decrease over time) and intercepts for sport competence beliefs.

Perceived Value of Athletics

Data analysis of the LGM for perceived value of athletics, employing robust estimates correcting for nonnormality, resulted in a significant mean intercept value of 5.96, $p < .001$, and a slope value of -.185, $p < .001$. The intercept variance was significant at .715, $p < .05$. The slope variance was also significant at a value of .150, $p < .05$. The correlation between slope and intercept was not significant, -.004, $p > .05$. Robust, goodness of fit indices pointed to acceptable model fit of the data, with Satorra-Bentler scaled chi-square, S-Bχ^2 (1, $N = 865$) =

2.337, $p > .05$, and Robust CFI = 0.997. That is, a negative linear growth model, over the three years analyzed, fits the data well. These findings indicate idiosyncratic negative growth (decrease over time) and intercepts for perceived value of athletics.

Self-Esteem

Data analysis of the LGM for self-esteem resulted in a significant mean intercept value of 3.022, $p < .001$, but a non-significant slope value of .024, $p > .05$. The intercept variance was significant at .239, $p < .05$. The slope variance was also significant at .050, $p < .05$. The correlation between slope and intercept was significant at -.430, $p < .05$. Goodness of fit indices pointed to an acceptable model fit to the data, with χ^2 (1, $N = 641$) = 5.294, $p < .05$, and CFI = .972. That is, a linear growth pattern over the three years analyzed fits the data well. The findings also indicate that individual difference characterizes initial self-esteem values and the rate of change. However, the insignificant slope indicates that statistically the slope is not different from zero, an indication that growth was not present. This finding is supported by the relatively strong slope-intercept correlation. This conclusion is further supported by the relatively similar mean self-esteem values over the three years of assessment: Year 1 ($M = 3.00$, $SD = .78$), Year 2 ($M = 3.10$, $SD = .80$), and Year 3 ($M = 3.05$, $SD = .75$). Paired sample t-tests between self-esteem values for the first and second years, second and third years, and first and third years, were conducted. The results indicate a significant difference in self-esteem between Year 1 and Year 2 ($t = -2.54$, $p < .05$), but no significant differences Year 2 and Year 3 ($t = 1.47$, $p > .05$) and Year 1 and Year 3 ($t = -1.51$, $p > .05$). These findings indicate that the acceptable fit of the linear growth model to the data is likely due to the significant mean difference between the first and second years. These findings also indicate that the non-significant slope is likely the

result of the non-significant mean differences between self-esteem in Years 1 and 3, and Years 2 and 3.

Discussion

William James' (1892/1961) definition of self-esteem, the ratio of success to pretensions, makes great sense, yet has received only mixed research support. Researchers addressing the ratio have tended to operationalize pretensions in terms of the subjective importance of an activity to the individual (e.g., Harter, 1990a; Marsh, 1994). While the work of Harter and her colleagues provides rather strong support for James' formulation, the work of Marsh and his colleagues has shown that importance adds little to the prediction of self-esteem beyond what is predicted by self-concept of ability.

The mixed results surrounding the question of importance called for a closer reading of James' (1892/1961) definition and an alternative empirical approach. In this study, we undertook both a broader approach to operationalizing pretensions, and an examination of change over time in the variables emphasized by James. Further, this is the first study in which data pertaining to James' definition, were assessed specifically for fit of a linear growth function, and variability in slope and intercept. The research conducted by Harter and her colleagues and Marsh and his colleagues was cross-sectional, not longitudinal, and therefore could not address the question of idiosyncratic growth.

The results of the data analyses support James' hypothesis regarding the relationship of success to pretensions. The declines in both sport competence beliefs and the value of athletics over the three-year period assessed were statistically significant. Although the overall means of both variables remained relatively high, the results indicate the possibility of compensatory cognition in response to the evidence of reality. More specifically, as students in this sample

learned they are not as competent athletically as they once believed (as seen clearly in the decline in perceived athletic competence), it is possible they compensated for said decline with a proportional decline in the perceived value of athletics (see also Jacobs et al, in press).

The hypothesis that self-esteem would remain stable received only mixed support. Although a linear growth model for self-esteem fit the data well, indicating gradual increase in self-esteem over time, the slope was not significantly different from zero, indicating absence of growth. Further analysis of the data indicated that self-esteem was significantly different only between Years 1 and 2, but not between any other two years. The mixed findings may have resulted from the relatively low reliability for the self-esteem measure in Year 1 as compared to Years 2 and 3. Recall that the reliability estimate for Year 1 self-esteem was .50. The lower reliability for the Year 1 scale likely occurred because of the relatively young age of the sample. The use of only three items to assess self-esteem may also have affected the strength of the reliability estimate, as covariance is an integral component of reliability, and covariance increases with larger number of items (Pedhazur & Pedhazur-Schmelkin, 1991). Nevertheless, we believe the reliabilities of .50 and above are adequate for this phase of the present research pursuit, as this was the first time the patterns of change in competence beliefs, values, and self-esteem were assessed together. However, future studies assessing the model proposed must rely on instrumentation with higher reliability estimates. If Harter's self-esteem measure is used, the entire measure should be used rather than just the three items used in the first year of this study.

The non-significance of self-esteem's slope may have occurred because the significant negative slopes for both sport competence beliefs and valuing of athletic functioned to maintain self-esteem, supporting James' (1892/1961) hypothesis. Further exploration of this issue is needed, however.

Another interesting result of this study was that the slope and intercept variance values were significantly different from zero was supported, supporting our hypothesis about these variables. This result indicates that idiosyncratic growth curves occurred for these variables. Therefore, subjects had different start values on the three variables, and did not necessarily change at the same rate or in the same direction.

Implications for Youth Sport and Fitness

One implication of these findings for individuals working with children and adolescents in athletic settings is the possible impact of declining sport competence beliefs and value of athletic activity on continued sport participation. Weiss and colleagues (Weiss, 1995; Weiss & Chaumeton, 1992) proposed that motivation to continue participating in sport and master sport skills depends on perceptions of competence and other self-factors (e.g., locus of causality), an idea previously articulated by Harter (1978) and White (1959). Researchers in sport and exercise psychology have tested models designed to explain the relation between competence beliefs and motivation in sport (Williams & Gill, 1995; Wong & Bridges, 1995). For instance, Williams and Gill found that intrinsic interest was predicted by perceived competence and task-goal orientation. They also found that perceived competence, intrinsic interest, and task-goal orientation predicted effort (measured as trying hard and persistence). These findings are interesting with respect to the findings of the present study. Wong and Bridges found that perceived competence was predicted by external control, coaching behavior (encouragement and instruction), and trait anxiety. Other factors found by researchers to relate significantly to children and adolescent's competence beliefs are age, coach feedback, ego orientation, maturation, parent and coach ratings of competence, and sources of competence information used by children (Duda & White, 1992; Duncan & Duncan, 1991; Horn, 1985; Horn & Weiss,

1991; Horn & Hasbrook, 1986, 1987; Lee et al., 1995; Veal & Campagnone, 1995; Wigfield et al., 1997; Williams, 1994). Consistent with our findings, researchers should add valuing of athletics to future models of competence motivation.

How parents and teachers might influence children's sense of competence and valuing, and participation in sport is important to consider, particularly given the sometimes negative involvement many parents have in youth sports, as chronicled recently in the media. Wigfield and colleagues (1997) found that parent and teacher ratings of children's competence are related to children's sport competence beliefs and their interest in sport, with the relations increasing in strength across age . Overall, parents' ratings related more strongly to children's beliefs and values than did teacher ratings. These findings indicate that although both parent and teacher ratings are related to children's self-ratings of competence and interest in sport, parent beliefs may have the strongest impact on competence perceptions and, ultimately, interest in sport due to either greater familiarity with, or influence on their children. Such influences can be positive or negative, depending on parents' approach to sport. If parents focus too much on wins, losses, and relative performance, rather than on the pleasure of learning sport skills and good sportsmanship, children not doing well in sport are likely to lose interest in continued sport participation.

To prevent this outcome, children need to learn to focus on skill development rather than outcomes, such that all children feel competent, personal control for effort and performance, and value athletic involvement for a lifetime of sport enjoyment, health and fitness. Clearly, not all children are talented enough to earn college scholarships or compete at the elite levels. Yet, one must wonder how many children are lost to sport due to self-processes that decrease motivation to continue athletic involvement prematurely. Unfortunately, the current societal focus on

athletic outcomes (e.g., dunking a basketball, scoring a goal in soccer, or winning a tennis match) rather than mastering sport skills makes athletic failure a very painful endeavor for those unable to succeed. It is no wonder theorists like James proposed relief from the psychological burden of unattainable pretensions by dropping those pretensions. However, while it may be acceptable for adults to decrease pretensions as they had their chance to succeed and failed, it is troubling that children decrease valuing of athletics because of perceptions of poor competence when their true competence has yet been attained. The onus falls on parents, teachers, and coaches to teach children how to evaluate performance adaptively, for adults possess the cognitive capacity to do so, and have the responsibility to teach adaptive self-processes.

Teaching task focus is not easy for adults, as children rely on a variety of sources of competence information (e.g., peers and game outcomes) besides adults, particularly as they enter adolescence (Horn & Hasbrook, 1986; Horn & Hasbrook, 1987; Horn & Weiss, 1991). Messages delivered by adults are easily supplanted by peer observation and influence. Further, some parents seem unable to distinguish their children's success from their own, applying unnecessary pressure on children to succeed when children just want to have fun. Therefore, adults likely need training in how to interact with children about athletic involvement. It is proposed that youth sport coaches, physical education teachers, and parents of young athletes attend training seminars that teach adults developmental processes associated with youth sport and learning of sport skills. Where possible, sport organizations should encourage, if not require, such training. The goal of youth sport should be development of sport skill and favorable attitudes toward continued sport participation. The findings of the present study indicate that when children feel competent in sport, they also value athletics. Conversely, the findings also indicate that when children do not feel competent in sport, they also devalue athletics

proportionally. Perhaps they do so for maintenance of self-esteem as proposed by James and Epstein. Only experimental research can determine cause and effect. However, the current findings are certainly supportive of this speculation.

Implications for Future Research

Beside the implications for youth sport and fitness, the findings of this study indicate the utility of Latent Growth Modeling for developmental research. The ability to test specific growth patterns, and assess individual differences in initial assessments and growth, allow researchers to obtain a more complete description of developmental processes than more traditional methods (e.g., repeated measures ANOVA). In the present study, initial values and rate of change of sport competence beliefs, perceived value of athletics, and self-esteem, were found to vary significantly. These findings indicate that no individual growth pattern can accurately depict growth processes for all participants in the present sample. However, because the linear growth pattern was significant for both sport competence beliefs and perceived value of athletics, the conclusion can be drawn that on average the two variables declined over time, and in a linear fashion, whereas self-esteem, varied only from the first to second year, stabilizing thereafter. Researchers should continue to employ LGM to assess growth patterns in longitudinal data sets.

These techniques could be used to address a variety of individual difference factors as well. The purpose of this study was to uncover general patterns of change in the slopes of competence beliefs, valuing of sport, and self-esteem, and so such differences were not examined here. A factor that may influence competence beliefs and valuing of sport, not assessed in the present study, is gender. Williams and Gill (1995) found gender significantly predicted perceived competence, namely males reported higher levels of perceived athletic competence

than females. Wigfield and colleagues (1997) found gender difference for sport competence beliefs, usefulness and importance, and interest across the three years of their longitudinal study. These differences favored males in that females reported lower beliefs at each grade level. Further, these differences in sport competence beliefs and the usefulness and importance of sport increased slightly over time. Only difference in interest remained stable over time. Jacobs et al. (in press) found that across childhood and adolescence boys had more positive competence beliefs about sports than did girls. However, the gap in valuing of sports favoring boys narrowed by the end of high school. Researchers need to pursue the sources of the gender-linked discrepancy in valuing of athletic activity. Perhaps the increasing popularity of women's sport (e.g., soccer and basketball) will lead to increased beliefs in the usefulness and importance of sport for girls. Other individual difference factors could also be examined.

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Footnotes

[1]Other indicators of competence perceptions, valuing, and self-esteem found in the dataset were not included if not assessed in all three time points.

[2]The analytic model focused on change across the three years of the study. Because each cohort consisted of children from three different grades, we also could have included age in the analysis. We did not do so because Wigfield et al. (1997) found that longitudinal and cross sectional analyses of competence beliefs, and values, produced relatively similar results.

Table 1

Means and standard deviations for sport competence beliefs, perceived value of athletics, and self-esteem, with Cronbach coefficient alphas

	Year 1		Year 2		Year 3	
Variable	M	SD	M	SD	M	SD
Competence beliefs[a]	5.56	1.07 (.74)	5.42	1.05 (.74)	5.25	1.16 (.79)
Valuing[b]	5.93	1.25 (.69)	5.82	1.30 (.80)	5.57	1.44 (.85)
Self-esteem	3.00	0.78 (.50)	3.10	0.80 (.60)	3.05	0.75 (.62)

Note. Cronbach coefficient alpha values for each scale are reported in parentheses after standard deviations.

[a]Sport competence beliefs. [b]Valuing of athletics.

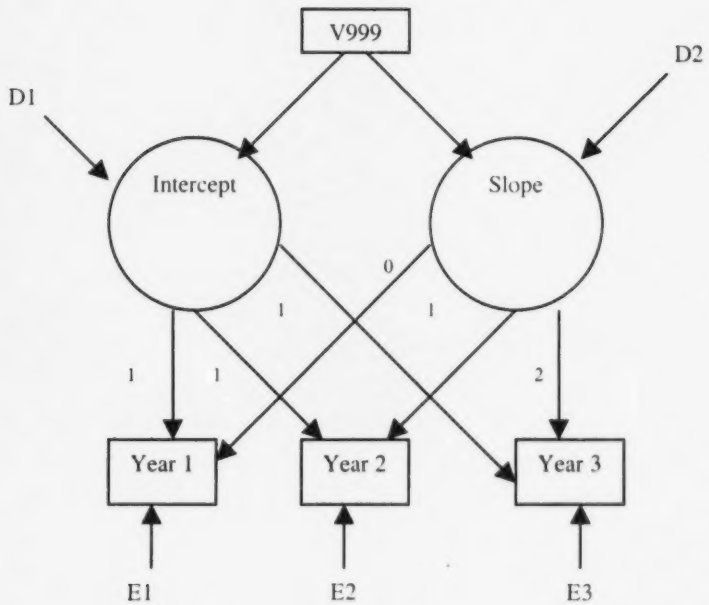
Figure Captions

Figure 1. The basic Latent Growth Model assessed in all three analyses

Note. Variables Year 1, Year 2, and Year 3 represent the three consecutive years for each construct analyzed (sport competence beliefs, perceived value of sport, and self-esteem). Slope and intercept are the latent (non-measured variables). E1, E2, and E3 are the error terms for the measured variables. D1 and D2 are the disturbances (term for factor errors) for intercept and slope, respectively. V999 is a constant employed to assess the slope and intercept variance for significant difference from zero.

Figure 2. Linear growth patterns with intercept and slope values

Note. Intercept and slope values appear, in that order and in parentheses, just above the valuing line and just below the lines for competence beliefs and self-esteem. The x-axis represents Years 1 through 3 of the study. The y-axis represents scale values for intercept and slope.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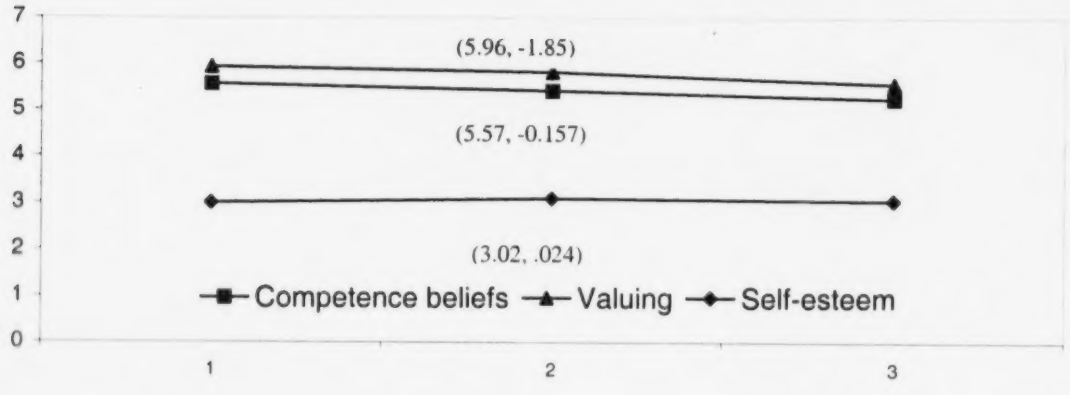
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Competence beliefs
Valuing
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